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PATENT APPLICATION

METHOD AND SYSTEM FOR TRANSLATION MANAGEMENT
OF SOURCE LANGUAGE TEXT PHRASES

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BACKGROUND OF THE INVENTION

1. Field Of The Invention

The present invention generally relates to the translation of text phrases
10 from a source language to a target language. The present invention specifically
relates to a management of such a translation that facilitates an effective
operation of a source code control system.

2. Description Of The Related Art

15 Software developers utilize some form of a source code control system for
organizing, tracking, and maintaining an evolving source code configuration of a
national language support (NLS) application. Each text phrase (e.g., "File",
"Edit", "View", "Insert", "Format", "Tools", "Table", "Window" and "Help" on a
toolbar of a word processing NLS application) in a source language (hereinafter
20 "source language text phrase") is extracted from the source code and placed
within an external master text file which serves as a basis for multiple translation
of the source language text phrases therein. While known source code control
systems can perform a comprehensive management of the source code
configuration, the prior art source code control systems typically fail to perform a
25 comprehensive management of the master text file during various translation of
the source language text phrases therein.

Specifically, such systems often fail to address several issues. The first issue is a modification of a source language text phrase within the master text file while minimizing, if not preventing, inadvertent overwrites and corruption of other source language text phrases within the master text file. The second issue is an importation management of a translated text file that provides a notification of the translated text file being an incomplete translation of the master text file. The third issue is an importation management of a translated version of a source language text phrase (hereinafter "target language text phrase") being a translation of an incorrect version of the source language text phrase. The present invention addresses these issues.

T 0 4 4 3 0 " 0 2 4 9 3 5 0

SUMMARY OF THE INVENTION

The present invention relates to a method and a system for translation management of master text files that overcomes the disadvantages associated with the prior art. Various aspects of the invention are novel, non-obvious, and provide various advantages. While the actual nature of the present invention covered herein can only be determined with reference to the claims appended hereto, certain features, which are characteristic of the embodiments disclosed herein, are described briefly as follows.

10 One form of the present invention is a method for managing a translation of a master text file. A first source language text phrase is stored as a first entry within a database. A target language text phrase as a translated version of the first source language text phrase is stored within the database after a storage of the first source language text phrase within the database. A second source language text phrase as a modified version of the first source language text phrase is stored within the database after a storage of the first source language text phrase within the database. A notification indicating the target language text phrase is an incorrect translation is communicated when the second source language text phrase is stored within the database after a storage of the target language text phrase within the database.

20 A second form of the present invention is a method for managing a master text file including a source language text phrase. The source language text phrase is stored as a first entry within a database. A translated text file corresponding to the master text file is imported. The translated text file includes one or more target language text phrases. Each target language text phrase is stored as an individual entry within the database. A notification indicating the translated text file is an incomplete translation of the master text file is

communicated when all of the target language text phrases fail to correspond to the source language text phrase.

A third form of the present invention is a system for managing a translation of a master text file. The system comprises a database and a computer. The computer is operable to control a storage of a first source language text phrase is stored as a first entry within a database; a storage of a target language text phrase as a translated version of the first source language text phrase within the database after a storage of the first source language text phrase within the database; and a storage of a second source language text phrase as a modified version of the first source language text phrase within the database after a storage of the first source language text phrase within the database. The computer is further operable to communicate a notification indicating the target language text phrase is an incorrect translation when the second source language text phrase is stored within the database after a storage of the target language text phrase within the database.

A fourth form of the present invention is a system for managing a master text file including a source language text phrase. The system comprises a database and a computer. The computer is operable to control a storage of the source language text phrase as a first entry within a database; an importation of translated text file corresponding to the master text file, the translated text file including one or more target language text phrases; and a storage of each target language text phrase as an individual entry within the database. The computer is further operable to communicate a notification indicating the translated text file is an incomplete translation of the master text file when all of the target language text phrases fail to correspond to the source language text phrase.

A fifth form of the present invention is a computer program product in a computer readable medium for managing a translation of a master text file. The computer program product comprises computer readable code for storing a first source language text phrase is stored as a first entry within a database; a target language text phrase as a translated version of the first source language text phrase within the database after a storage of the first source language text phrase within the database; and a second source language text phrase as a modified version of the first source language text phrase within the database after a storage of the first source language text phrase within the database. The computer program product further comprises computer readable code for communicating a notification indicating the target language text phrase is an incorrect translation when the second source language text phrase is stored within the database after a storage of the target language text phrase within the database.

A sixth form of the present invention is a computer program product in a computer readable medium for managing a master text file including a source language text phrase. The computer program product comprises computer readable code for storing the source language text phrase as a first entry within a database; importing a translated text file corresponding to the master text file, the translated text file including one or more target language text phrases; and storing each target language text phrase as an individual entry within the database. The computer program product further comprises computer readable code for communicating a notification indicating the translated text file is an incomplete translation of the master text file when all of the target language text phrases fail to correspond to the source language text phrase.

The foregoing forms and other forms, features and advantages of the present invention will become further apparent from the following detailed description of the presently preferred embodiments, read in conjunction with the accompanying drawings. The detailed description and drawings are merely
5 illustrative of the invention rather than limiting, the scope of the invention being defined by the appended claims and equivalents thereof.

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BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of one embodiment of computer hardware employed in the present invention;

5 **FIG. 2** is a block diagram of one embodiment of computer software employed in the **FIG. 1** computer hardware;

FIG. 3 is a flow chart of one embodiment in accordance with the present invention of a master text file storage routine implemented by the **FIG. 2** computer software;

10 **FIG. 4** is a flow chart of one embodiment in accordance with the present invention of a translated text file storage routine implemented by the **FIG. 2** computer software;

FIG. 5 is a flow chart of one embodiment in accordance with the present invention of a source language text phrase modification routine implemented by
15 the **FIG. 2** computer software;

FIG. 6 is a flow chart of one embodiment in accordance with the present invention of an incomplete translation notification routine implemented by the **FIG. 2** computer software; and

FIG. 7 is a flow chart of one embodiment in accordance with the present
20 invention of an incorrect translation notification routine implemented by the **FIG. 2** computer software.

DETAILED DESCRIPTION OF THE PRESENTLY PREFERRED EMBODIMENTS

A computer **10** of the present invention is shown in **FIG. 1**. Referring to
5 **FIG. 1**, computer **10** may be configured in any form for accepting structured
inputs, processing the inputs in accordance with prescribed rules, and outputting
the processing results as would occur to those having ordinary skill in the art,
such as, for example, a personal computer, a workstation, a super computer, a
mainframe computer, a minicomputer, a super minicomputer, and a
10 microcomputer. Preferably, as shown, computer **10** is a server including a bus
11 for facilitating electrical communication among one or more central
processing units (CPU) **12**, a read-only memory (ROM) **13**, a random access
memory (RAM) **14**, an input/output (I/O) controller **15**, a disk controller **16**, a
communication controller **17**, and a user interface controller **18**.

15 CPU **12** is preferably one of the Intel families of microprocessors, one of
the AMD families of microprocessors, one of the Motorola families of
microprocessors, or one of the various versions of a Reduced Instruction Set
Computer microprocessor such as the PowerPC chip manufactured by
International Business Machine Corporation (IBM). ROM **13** stores various
20 controlling programs such as the Basic Input-Output System (BIOS) developed
by IBM. RAM **14** is the memory for loading an operating system and selectively
loading controlling programs and application programs.

Controller **15** is an aggregate of controllers for facilitating an interaction
between CPU **12** and pointing devices such as a mouse **20** and a keyboard **21**,
25 and between CPU **12** and output devices such as a printer **22** and a fax **23**.

Controller **16** is an aggregate of controllers for facilitating an interaction between
CPU **12** and data storage devices such as disks drives **24** in the form of a hard

drive, a floppy drive, and a compact-disc drive. The hard drive of disk drives **24** stores a conventional operating system, such as an AIX operating system or an OS/2 operating system by IBM. Controller **17** is an aggregate of controllers for
5 facilitating an interaction between CPU **12** and a network **25**, and between CPU **12** and a database **26** stored on a local or remote storage device. Controller **18** is an aggregate of controllers for facilitating an interaction between CPU **12** and a graphic display device such as a monitor **27**, and between CPU **12** and an audio device such as a speaker **28**.

10 Those having skill in the art will appreciate alternative computer hardware embodiments of computer **10** for implementing the principles of the present invention.

Referring additionally to **FIG. 2**, computer **10** includes translation management software **30** for implementing a master text file storage routine **40**
15 (**FIG. 3**), a translated text file routine **50** (**FIG. 4**), a source language text phrase modification routine **60** (**FIG. 5**), an incomplete translation routine **70** (**FIG. 6**), and an incorrect translation routine **80** (**FIG. 7**) under control of the operating system. Software **30** is a computer program physically stored within a hard drive of disk drives **24** whereby the hard drive is a computer readable medium that is
20 electrically, magnetically, optically, or chemically altered to store computer readable code. In other embodiments of computer **10**, software **30** can be stored in other computer readable mediums of computer **10**, such as the CD-ROM drive of disk drives **24**, or software **30** can be downloaded to computer **10** via network **25**. Also in other embodiments of computer **10**, software **30** can
25 be partially or fully implemented with digital circuitry, analog circuitry, or both.

A functional description of software **30** will now be described herein by the description of data transfers and signal transmissions between software **30** and database **26** during execution of the various routines of the present invention.

- 5 First, an implementation of routine **40** (**FIG. 3**) by a database management module **31** of software **30** to initially store a master text file **MTF** within database **26** is described. Master text file **MTF** includes multiple source language text phrases such as source language text phrase **SLTP**. Second, an implementation of routine **50** (**FIG. 4**) by database management module **31** to
- 10 store a translated text file **TTF** within database **26** is described. Translated text file **TTF** includes multiple target language text phrases such as a target language text phrase **TLTP** that corresponds to source language text phrase **SLTP**.

- Third, an implementation of routine **60** (**FIG. 5**) by database management module **31** to store a modified version **SLTP'** of source language text phrase
- 15 **SLTP** within database **26** is described. Fourth, an implementation of routine **70** (**FIG. 6**) by a verification notification module **32** of software **30** to generate a verification notification **VN** indicating an incomplete translation of master text file **MTF** by translated text file **TTF** is described. Finally, an implementation of routine **80** (**FIG. 7**) to generate a modification notification **MN** indicating an
- 20 incorrect translation of source language text phrase **SLTP** by target language text phrase **TLTP** is described. Those having ordinary skill in the art will appreciate the physical elements of computer **10** that are associated with such data transfers and signal transmissions.

Referring to **FIGS. 1-3**, module **31** imports master text file **MTF** during a stage **S42** of routine **40** in response to appropriate commands (not shown) from a source code manager (not shown) via a user interface **34** of software **30** (e.g., a graphical user interface or a network interface). Module **31** thereafter proceeds to a stage **S44** of routine **40** to store each source language text phrase of master text file **MTF** as individual entries within database **26**. The following TABLE 1 illustrates one embodiment of a database table for each individual entry of a source language text phrase of master text file **MTF**:

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TABLE 1

ROW NO.	SOURCE LANGUAGE TEXT PHRASE	SOURCE ID. NO.	SOURCE TIMESTAMP	VERIFICATION FLAG	MODIFICATION FLAG
1	"FILE"	1	Date/Time	Reset/Set	Reset/Set
2	"EDIT"	2	Date/Time	Reset/Set	Reset/Set
3	"VIEW"	3	Date/Time	Reset/Set	Reset/Set
4	"INSERT"	4	Date/Time	Reset/Set	Reset/Set
5	"FORMAT"	5	Date/Time	Reset/Set	Reset/Set
6	"TOOLS"	6	Date/Time	Reset/Set	Reset/Set
7	"TABLE"	7	Date/Time	Reset/Set	Reset/Set
8	"WINDOW"	8	Date/Time	Reset/Set	Reset/Set
9	"HELP"	9	Date/Time	Reset/Set	Reset/Set

The SOURCE ID NO. column includes data indicative of an identification number of each source language text phrase. The SOURCE TIMESTAMP column includes data indicative of a date and a time of an initial storage of a source language text phrase or a date and time of modified version of a source language text phrase as will be further described herein in connection with routine **60** (**FIG. 5**). The flags of the VERIFICATION FLAG column are initially reset and are selectively set as will be further described herein in connection with

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routine **70** (FIG. 6). The MODIFICATION FLAG column is initially reset and is selectively set as will be further described herein in connection with routine **80** (FIG. 7).

- 5 Module **31** thereafter proceeds to a stage **S46** of routine **40** to communicate the location of master text file **MTF** within database **26** (e.g., rows 1-9) to module **32** and module **33**. Routine **40** is terminated upon completion of stage **S46**.

- 10 Referring to FIGS. 1, 2, and 4, module **31** imports translated text file **TTF** during a stage **S52** of routine **50** in response to appropriate commands (not shown) from a source code manager (not shown) via user interface **34**. Module **31** thereafter proceeds to a stage **S54** of routine **50** to store each target language text phrase of translated text file **TTF** as individual entries within database **26**. The following TABLE 2 illustrates one embodiment of a database
- 15 table for each individual entry of a target language text phrase of translated text file **TTF**:

TABLE 2

ROW NO.	TARGET LANGUAGE TEXT PHRASE	TARGET ID NO.	TARGET TIMESTAMP
10	Translation of "FILE"	1	Date/Time
11	Translation of "EDIT"	2	Date/Time
12	Translation of "VIEW"	3	Date/Time
13	Translation of "INSERT"	4	Date/Time
14	Translation of "FORMAT"	5	Date/Time
15	Translation of "TOOLS"	6	Date/Time
16	Translation of "TABLE"	7	Date/Time
17	Translation of "WINDOW"	8	Date/Time
18	Translation of "HELP"	9	Date/Time

The TARGET ID NO. includes data indicative of an identification number of a corresponding source language text phrase. The TIMESTAMP column includes data indicative of a date and a time of a storage of a target language text phrase. In an alternative embodiment, the TARGET TIMESTAMP column can be excluded from TABLE 2 and included within TABLE 1.

Module **31** thereafter proceeds to a stage **S56** of routine **50** to communicate the location of translated text file **TTF** within database **26** (e.g., rows 10-18) to module **32** and module **33**. Routine **50** is terminated upon completion of stage **S56**.

Referring to **FIGS. 1, 2, and 5**, module **31** imports a modified version **SLTP'** of source language text phrase **SLTP** during a stage **S62** of routine **60** in response to appropriate commands (not shown) from a source code manager (not shown) via user interface **34**. Module **31** thereafter proceeds to a stage **S64** of routine **40** to store modified version **SLTP'** of source language text phrase **SLTP** within database **26**. In one embodiment, module **31** overwrites source language text phrase **SLTP** with modified version **SLTP'** and modifies the data under the SOURCE TIMESTAMP column to reflect the storage of the modified version **SLTP'**. Routine **60** is terminated upon completion of stage **S64**.

Referring to **FIGS. 1, 2, and 6**, module **32** verifies a storage of a target language text phrase for each source language text phrase within database **26** during a stage **S72** of routine **70** in response to appropriate commands (not shown) from a source code manager (not shown) via a user interface **34**. In one embodiment, module **32** compares the SOURCE ID NO. column of TABLE 1 and the TARGET ID NO. column of TABLE 2 to ascertain whether any target language text phrases are missing from translated text file **TTF**. Module **32** thereafter proceeds to a stage **S74** of routine **70** to direct module **31** to set the

flags under the VERIFICATION FLAG column of TABLE 1 for each source language text phrase that does not have a corresponding target language text phrase stored within database 26. For example, translated text file TTF may
5 have excluded the target language text phrase of row 10 of TABLE 2 from database 26. Thus, the flag for the source language text phrase of row 1 of TABLE 1 will be set.

Module 32 thereafter proceeds to a stage S76 of routine 70 to direct module 31 to store each source language text phrase that does not have a
10 corresponding target language text phrase stored within database 26 into translated text file TTF. For example, with the target language text phrase of row 10 of TABLE 2 missing from translated text file TTF, the source language text phrase of row 1 of TABLE 1 will be stored in row 10 of TABLE 2. Module 32 thereafter proceeds to a stage S78 of routine 70 to communicate a verification
15 notification VN to the source code manager (not shown) via user interface 34. The verification notification VN will indicate incomplete translation of master text file MTF by translated text file TTF. Routine 70 is terminated upon completion of stage S78.

Referring to FIGS. 1, 2, and 7, module 33 compares the timestamps of
20 each corresponding pair of source language text phrase and target language text phrase during a stage S82 of routine 80 in response to appropriate commands (not shown) from a source code manager (not shown) via a user interface 34. In one embodiment, module 33 compares the SOURCE TIMESTAMP column of TABLE 1 and the TARGET TIMESTAMP column of TABLE 2 to ascertain
25 whether the correct version (original or modified) of each source language text phrase was translated. The TARGET TIMESTAMP including a date and a time that is prior to corresponding date and a time of the SOURCE TIMESTAMP is an

indication that the target language text phrase is a translated version of an original version of a corresponding source language text phrase instead of being a translated version of a modified version of a corresponding source language text phrase.

Module **33** thereafter proceeds to a stage **S84** of routine **80** to direct module **31** to set the flags under the MODIFICATION FLAG column of TABLE 1 for each source language text phrase that was modified after a storage of a corresponding target language text phrase. For example, when target language text phrase **TLTP** was stored in database **26** prior to an importation and storage of the modified version **STLP'** of source language text phrase **SLTP**, then the modification flag is set. Module **33** thereafter proceeds to a stage **S86** of routine **80** to direct module **31** to store each modified version of source language text phrases that have been incorrectly translated into the appropriate location of translated text file **TTF**. For example, the modified version **STLP'** of source language text phrase **SLTP** is written within the database entry of target language text phrase **TLTP**. Module **32** thereafter proceeds to a stage **S78** of routine **70** to communicate a modification notification **MN** to the source code manager (not shown) via user interface **34**. The modification notification **MN** will indicate an incorrect translation of one or more target language text phrases. Routine **80** is terminated upon completion of stage **S88**.

While the embodiments of the present invention disclosed herein are presently considered to be preferred, various changes and modifications can be made without departing from the spirit and scope of the invention. The scope of the invention is indicated in the appended claims, and all changes that come within the meaning and range of equivalents are intended to be embraced therein.